

IPW

P A T E N T

Attorney Docket :
032301WN2851



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Roland Krafczyk, et al.

Serial No. : 10/722,257

Filed: February 6, 2004

)
)
)
)
)
)

CONFIRMATION NO.: 4454

Examiner: K. Peng

Group Art Unit: 1712

For **SILOXANE OLIGOMERS, A PROCESS FOR THEIR PRODUCTION AND
THEIR USE**

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

A response to the Office Action dated November 2, 2004 is due by February 2, 2005. Therefore, please accept this Amendment as timely filed and fully responsive.

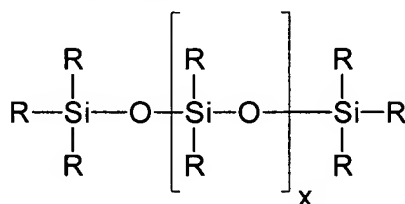
In response to the Office Action dated November 2, 2004, kindly amend the above-identified patent application as follows.

IN THE CLAIMS:

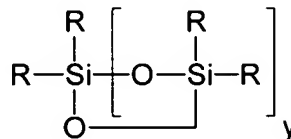
Please amend the claims and add new claim 21 as shown below:

Claims 1-5 (Canceled)

Claim 6 (Currently Amended) A process for the production of siloxane oligomers of the general formulae I or II



I



II

in which x is an integer from 0 to 1000, y is a number from 1 to 1000,
and the substituents R are identical or different and consist of functionalised alkyl groups, (C₁ – C₁₈) alkyl, (C₁ - C₄)alkoxy, (C₁ - C₄)haloalkoxy, phenyl, aryl, aralkyl or hydroxy groups, wherein at least one functionalised alkyl group is present per oligomer molecule, the method comprising:

treating a halogenalkyltrihalogensilane to oligomerization in the presence of alcohol and water and optionally co-oligomerized with at least one of a (C₁-C₁₈)-alkyl-, phenyl-, aryl- or aralkyl-trihalogensilane and silicon tetrachloride, optionally modifying a halogenalkyl function in a further step.

Claim 7 (Original) The process for the production of the siloxane oligomer according to claim 6, further comprising modifying the halogenalkyl function with ammonia and separating ammonium halide.

Claim 8 (Original) The process for the production of the siloxane oligomer according to claim 6, further comprising modifying the halogenalkyl function with sodium methacrylate or potassium methacrylate and separating sodium halide or potassium halide.

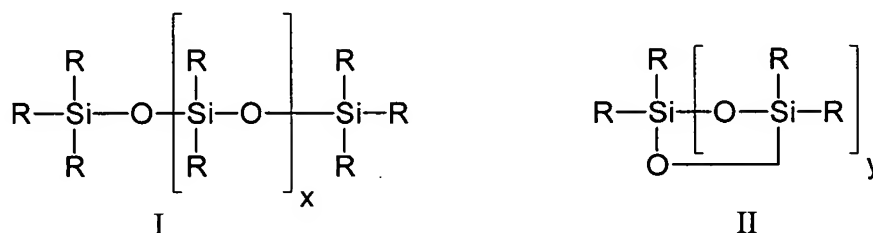
Claim 9 (Original) The process for the production of the siloxane oligomer according to claim 6, further comprising modifying the halogenalkyl function with ammonia and hydrogen sulfide or ammonium hydrogen sulfide and separating ammonium halide, or modifying with sodium hydrogen sulfide or potassium hydrogen sulfide separating sodium halide or potassium halide.

Claim 10 (Original) The process for the production of the siloxane oligomer according to claim 6, further comprising modifying the halogenalkyl function with sodium, potassium or ammonium rhodanide and separating sodium, potassium or ammonium halide.

Claim 11 (Original) The process for the production of the siloxane oligomer according to claim 6, further comprising modifying the halogenalkyl function with sodium azide and separating sodium halide.

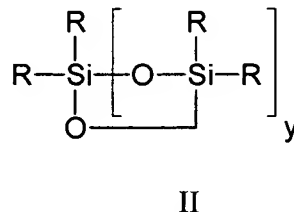
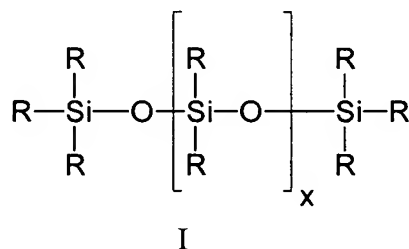
Claim 12 (Original) The process for the production of the siloxane oligomer according to claim 6, further comprising modifying the halogenalkyl function with sodium polysulfide or with sodium sulfide and sulfur or sodium polysulfide and sodium sulfide, and separating sodium halide.

Claim 13 (Withdrawn) A rubber composition containing a siloxane oligomer of the general formulae I or II



in which x is an integer from 0 to 1000, y is a number from 1 to 1000,
and the substituents R are identical or different and consist of functionalised alkyl groups, (C₁ – C₁₈) alkyl, (C₁ - C₄)alkoxy, (C₁ - C₄)haloalkoxy, phenyl, aryl, aralkyl or hydroxy groups, wherein at least one functionalised alkyl group is present per oligomer molecule as a coupling agents.

Claim 14 (Withdrawn) A rubber composition, comprising rubber, at least one of a precipitated silica and carbon black, and a siloxane oligomer of the general formulae I or II

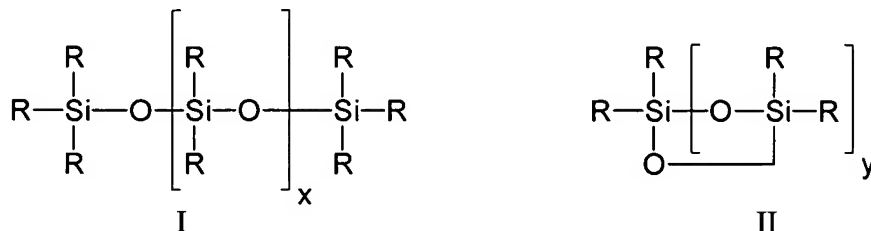


in which x is an integer from 0 to 1000, y is a number from 1 to 1000,
and the substituents R are identical or different and consist of functionalised alkyl groups, (C₁ - C₁₈) alkyl, (C₁ - C₄)alkoxy, (C₁ - C₄)haloalkoxy, phenyl, aryl, aralkyl or hydroxy groups, wherein at least one functionalised alkyl group is present per oligomer molecule.

Claim 15 (Withdrawn) The rubber composition according to claim 14 wherein the rubber is polybutadiene, polyisoprene, styrene/butadiene copolymers with styrene content of 1 to 60 wt. %, isobutylene/isoprene copolymers, butadiene/acrylonitrile copolymer with acrylonitrile content of 5 to 60 wt. %, ethylene/propylene/diene copolymer or mixtures of these rubbers.

Claim 16 (Withdrawn) The rubber composition according to claim 14 further comprising at least one or a reaction accelerator, reaction retarder, anti-ageing agent, stabilizer, processing auxiliary, plasticizer, wax, metal oxide, and activator.

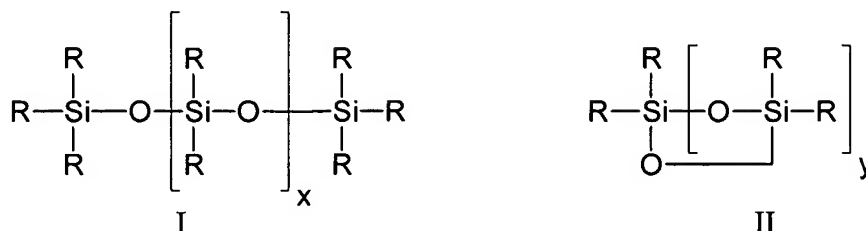
Claim 17 (Withdrawn) A process for making a rubber composition comprising mixing a rubber with a siloxane oligomer of the general formulae I or II



in which x is an integer from 0 to 1000, y is a number from 1 to 1000,
and the substituents R are identical or different and consist of functionalised alkyl groups, (C₁ – C₁₈) alkyl, (C₁ - C₄)alkoxy, (C₁ - C₄)haloalkoxy, phenyl, aryl, aralkyl or hydroxy groups, wherein at least one functionalised alkyl group is present per oligomer molecule,
a filler and optionally a rubber auxiliary substance in at least one thermomechanical mixing stage at 100 to 170°C, and
adding the resulting mixture to an internal kneader or roller at 40 to 110°C together with a crosslinking agent.

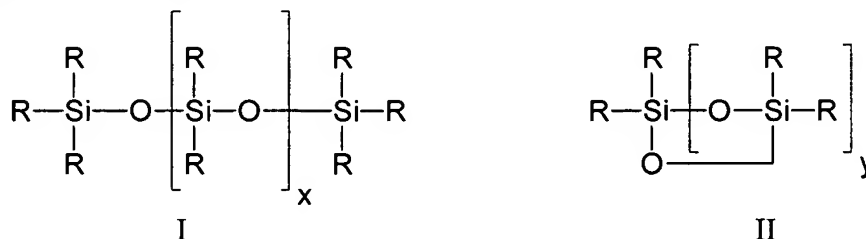
Claim 18 (Withdrawn) The process according to claim 17 further comprising shaping the resulting rubber composition into the desired article and vulcanizing to obtain a vulcanized rubber article.

Claim 19 (Withdrawn) A rubber tire containing a siloxane oligomer of the general formulae I or II



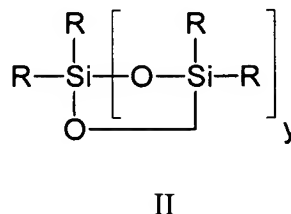
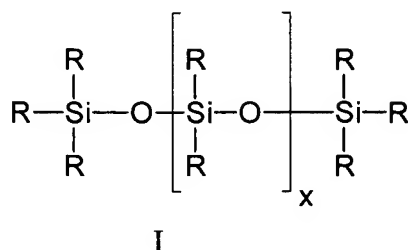
in which x is an integer from 0 to 1000, y is a number from 1 to 1000,
and the substituents R are identical or different and consist of functionalised alkyl groups, (C₁ - C₁₈) alkyl, (C₁ - C₄)alkoxy, (C₁ - C₄)haloalkoxy, phenyl, aryl, aralkyl or hydroxy groups, wherein at least one functionalised alkyl group is present per oligomer molecule.

Claim 20 (Withdrawn) A shaped rubber article containing a siloxane oligomer of the general formulae I or II



in which x is an integer from 0 to 1000, y is a number from 1 to 1000,
and the substituents R are identical or different and consist of functionalised alkyl groups, (C₁ - C₁₈) alkyl, (C₁ - C₄)alkoxy, (C₁ - C₄)haloalkoxy, phenyl, aryl, aralkyl or hydroxy groups, wherein at least one functionalised alkyl group is present per oligomer molecule.

Claim 21 (new): A process for the production of siloxane oligomers of the general formulae I or II



in which x is an integer from 0 to 1000, y is a number from 1 to 1000,
and the substituents R are identical or different and consist of functionalised alkyl groups, (C₁ – C₁₈) alkyl, (C₁ - C₄)alkoxy, (C₁ - C₄)haloalkoxy, phenyl, aryl, aralkyl or hydroxy groups, wherein at least one functionalised alkyl group is present per oligomer molecule,
the method comprising:

treating a halogenalkyltrihalogensilane to oligomerization in the presence of alcohol and water and optionally co-oligomerized with at least one of a (C₁-C₁₈)-alkyl-, phenyl-, aryl- or aralkyl-trihalogensilane and silicon tetrachloride, and

modifying the halogenalkyl function with:

- a) ammonia and separating ammonium halide,
- b) sodium methacrylate or potassium methacrylate and separating sodium halide or potassium halide,
- c) ammonia and hydrogen sulfide or ammonium hydrogen sulfide and separating ammonium halide,
- d) sodium hydrogen sulfide or potassium hydrogen sulfide and separating sodium halide or potassium halide,
- e) sodium, potassium or ammonium rhodanide and separating sodium, potassium or ammonium halide,

- f) sodium azide and separating sodium halide, or
- g) sodium polysulfide, sodium sulfide and sulfur, or sodium polysulfide and sodium sulfide, and separating sodium halide.

REMARKS

Applicants respectfully request reconsideration of this application, and reconsideration of the Office Action of November 2, 2004. Upon entry of this Amendment, claims 6-20 will remain pending in this application with claims 13-20 currently withdrawn. New claim 21 is added. The change to claim 6 and the newly added claim are supported by the specification and original claims. No new matter is incorporated by this Amendment.

Applicants gratefully acknowledge the Examiner's indication that claims 7-12 contain allowable subject matter. While these claims are objected to, the Examiner indicated they would be allowable if rewritten in independent form including all of the features of the base claim and any intervening. Applicants respectfully submit that, as discussed below, independent claim 6 has been amended in a manner that overcomes the outstanding rejection. Hence, claims 7-12 are also believed to be in condition for allowance. In addition, Applicants have added new independent claim 21 which is a combination of claims 6-12. Hence, claim 21 also is believed to be in condition for allowance.

* * * * *

Claim 6 is rejected under 35 U.S.C. §102(b) as purportedly anticipated by Yoshida (U.S. Pat. No. 6,107,505). The Office Action asserts Yoshida teaches each feature of claim 6 and thus anticipates the claimed invention. Applicants respectfully traverse.

Claim 6 concerns a process for the production of siloxane oligomers of the general formulae I or II as shown in the claim. The method includes treating a halogenalkyltrihalogensilane to oligomerization in the presence of alcohol and water and

co-oligomerized with at least one of a (C₁-C₁₈)-alkyl-, phenyl-, aryl- or aralkyl-trihalogensilane and silicon tetrachloride. In other words, in amended claim 6, the halogenalkyltrihalogensilane is co-oligomerized with at least one of a (C₁-C₁₈)-alkyl-, phenyl-, aryl- or aralkyl-trihalogensilane and silicon tetrachloride. This feature is neither taught nor fairly described by Yoshida.

Yoshida describes producing a polyorganosiloxane which can include co-oligomerization of the organotrichlorosilane with an organodichlorosilane or an organomonochlorosilane. See Column 3, Lines 39-41. However, Yoshida neither teaches nor fairly suggests co-oligomerization with at least one of a (C₁-C₁₈)-alkyl-, phenyl-, aryl- or aralkyl-trihalogensilane and silicon tetrachloride. Hence, Yoshida fails to teach or fairly describe each and every feature of claim 6 and thus cannot anticipate the claimed invention.

In view of the above remarks, Applicants submit this rejection is overcome and respectfully request it be withdrawn.

* * * * *

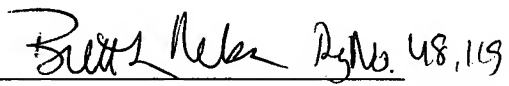
Applicants respectfully submit that this Amendment and the above remarks obviate the outstanding objection and rejection in this case, thereby placing the application in condition for allowance. Allowance of this application is earnestly solicited.

If any fees under 37 C.F.R. §§1.16 or 1.17 are due in connection with this filing, please charge the fees to Deposit Account No. 02-4300; Order No. 032301.2851.

If an extension of time under 37 C.F.R. §1.136 is necessary that is not accounted for in the papers filed herewith, such an extension is requested. The extension fee should be charged to Deposit Account No. 02-4300; Order No. 032301.2851.

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

By:  Reg. No. 48,119
for Robert G. Weilacher, Reg. No. 20,531
1850 M Street, N.W., Suite 800
Washington, D.C. 20036
Telephone: (202) 263-4300
Facsimile: (202) 263-4329

Dated: February 1, 2005